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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,246

07/20/2007

Jonas Nilsson

47113-5089 (227632)

1463

55694 7590 05/06/2010
DRINKER BIDDLE & REATH (DC)
1500 K STREET, N.W.
SUITE 1100
WASHINGTON, DC 20005-1209

EXAMINER

YEE, DEBORAH

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

05/06/2010

ELECTRONIC

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/584,246
Filing Date: July 20, 2007
Appellant(s): NILSSON ET AL.

Christopher P. Bruenjes
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 7, 2010 appealing from the Office action mailed March 9, 2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 2-23 are pending and have been rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the

subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

2001-49399	UEHARA	2-2001
5,714,114	UEHARA	2-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

Claims 2 to 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese patent 2001-49399 ("JP-399") alone or in view of US Patent 5,714,114 ("Uehara").

The English abstract of JP-399 discloses martensitic stainless steel alloy having a composition with constituents whose wt% ranges overlap or closely approximate those recited by claims 2 to 23; and such similarities in wt% ranges establishes a prima facie case of obviousness because it would be obvious for one skilled in the art to select the claimed alloy wt% ranges over the broader disclosure of the prior art since the prior art teaches the same utility for making cutting edge tool and same hardness property of >56 HRC, see MPEP 2144.05. Also similar to present invention, prior art steel is made by austenitizing, quenching and tempering without deep freezing.

Furthermore, JP-399 in paragraph [0001] teaches using steel to make edged tool, which would include blade, knife or cutting tool as recited by one or more of the dependent claims.

JP-399 differs from present invention because of the following reasons:

JP-399 teaches a lower limit of 0.1% Cu whereas instant claim 17 recites $< 0.1\%$ Cu. It is the Examiner's position, however, that 0.1% Cu closely approximates the upper limit of $< 0.1\%$ Cu such that one skilled in the art would expect the same property. In addition, Appellant has not demonstrated the claimed Cu range of < 0.1 (e.g. by comparative test data) to be somehow critical and productive of new and unexpected results to patentably distinguish claims over prior art.

JP-399 does not actively recite a Co range of about 0.5%, 1-2% and 0.5 to 2% as recited in instant claims 19, 20 and 21, respectively. Nevertheless, JP-399 in paragraph [0021] discloses adding Co to raise intensity of steel but it is an expensive element and a lot is not required; and in paragraph [0011] teach up to 5% Co as an optional element. Also it is well known and conventional practice in the metallurgical art to add up to 5% Co to analogous hardened tool steel to increase hardness as evident by the teaching on lines 60 to 67 of column 7 in Uehara. Since hardness is desired and sought by JP-399, then it would be an obvious modification well within the skill of the artisan to add small amounts of Co to produce no more than the known and expected effect from such an addition.

JP-399 does not teach the PRE equation and carbon to nitrogen ratio > 2 recited in the claims. It is the Examiner's position that it is well settled that there is no invention

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in the discovery of a general formula if it covers a composition described in the prior art, see *In re Cooper and Foley*, 1943C.D.357, 553 O.G.177. In the instant case, prior art example 8 in table 1 closely meets the claimed composition and in table 2 exhibits a hardness of 59.4HRC (within the claimed hardness range of >56HRC); and when calculated, has a PRE-value = 25.3 (with in claimed PRE>25) and C: N ratio =2.7 (within the claimed C: N ratio >2).

JP-399 does not disclose steel alloy comprising carbides, nitrides and/or carbonitrides with a maximal diameter not to exceed 5 μm as recited by claim 7 but such property would be expected since composition and process of making are closely met and in absence of evidence to the contrary.

(10) Response to Argument

Appellant's arguments filed April 7, 2010 have been fully considered but they are not persuasive.

Appellant argued that JP-399 and Uehara each fail to disclose less than 0.1 wt% Cu. Examiner alleges that the claimed range would have been obvious because the lower limit of 0.1%Cu "closely approximates" Appellants upper limit of <0.1%Cu. This allegation is apparently based on Federal Circuit decision such as *Titanium Metals Corp. of America v. Banner*, 778F.2d775,227USPQ773 (Fed. Cir.1985). For a reference to be render obvious concentrations outside the disclosed ranges based on this rationale, the Examiner must show that it would have been expected that the concentrations would have the same properties. For example, in *Titanium Metals*, examples were found bracketing the claimed concentration, and the examples with

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concentration on either side of the claimed concentration have similar properties. In contrast, the only example in JP-399, Example 21, that has a Cu concentration that is not greater than 0.1% has a substantial reduction in pitting potential (e.g. see Table 1 and Table 2 showing a pitting potential (V_{c100}) of only 12 compared to all other inventive examples 1-13 having a value near or greater than 100).

In response to argument it is the Examiner's position the steel of JP-399 teaches a lower limit of 0.1%Cu which closely approximates the upper limit <0.1%Cu (e.g. 0.0999%Cu) of instant claim 17 such that one skilled in the art would expect the same properties. Therefore a prima facie case of obviousness is established. See MPEP 2144.05, which states the following:

"...a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties." In *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium).

Appellant refers to Example 21 in JP-399 which contains <0.1%Cu and exhibits a substantial reduction in pitting potential compared to examples >0.1%Cu in tables 1 and 2. This comparison is ineffective to distinguish Cu content because example 21 in addition to 0.01%Cu also contains 0.33% Mo which is much lower than the prior art Mo range of 1 to 3% or Appellant's claimed Mo range of 2.5 to 4%. Therefore reduction in pitting potential maybe attributed not to <0.1% Cu but rather to an extremely low Mo which is a key element in improving pitting corrosion resistance for both present

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invention and JP-399. Note that a comparison must be done under identical condition except for the novel features of the invention in order to show unexpected results.

Appellant argued that prior art provides explicit disclosure teaching away from using less than 0.1%Cu in the steel alloy. Specifically, paragraph [0016] of the JP-399 and lines 44-53 of Uehara each state that Cu is a necessary element in a steel alloy containing Cr, Mo, and N for increasing pitting corrosion resistance. Further, both references state that if Cu is less than 0.1%, a sufficient effect on pitting corrosion resistance can not be obtained. Therefore a person of ordinary skill, upon reading JP-399 and Uehara, would be led away from adding Cu in a concentration less than 0.1%, even a value just slightly less than 0.1%. Further, Appellant unexpectedly discovered that by forming a steel alloy containing a specific combination of Cr, Mo and N, the alloy possesses an increased pitting corrosion resistance without the need of Cu content above 0.1% as required in JP-399.

In response to argument, prior art lines 44-53 of Uehara and paragraph [0016] of JP-399 state the following:

"Cu is an element which is very effective in greatly increasing pitting corrosion resistance when added in **a small amount** in the steel containing Cr, Mo and N. If Cu is less than 0.1%, a sufficient effect can not be obtained."

This disclosure teaches "a small amount" of Cu can improve corrosion resistance and $\geq 0.1\%$ Cu produces a sufficient level of pitting corrosion resistance for its given application. The disclosure does not discourage one skilled in the art to use a smaller Cu content when a lower pitting corrosion resistance is acceptable.

It should further be noted that it is well settled that the teaching of a reference is not limited to preferred embodiments. All disclosures of prior art, including non-preferred embodiments, must be considered in determining obviousness. See *In re Boe*, 148 USPQ 507, 510 (CCPA 1966), *Ex parte Thumm* 132 USPQ 66, 68, and *In re Siebentritt*, 152 USPQ 618. Moreover, under 35 USC § 103, a reference must be considered not only for what it expressly teaches, but also for what it fairly suggests. *In re Lamberti*, 545 F.2d 747, 192 USPQ 278, 280 (CCPA 1976); *In re Simon*, 59 CCPA 1140, 461 F.2d 1387, 174 USPQ 114 (1972); and *In re Mills*, 470 F.2d 649, 176 USPQ 196 (CCPA 1972). *Ultradent Prods., Inc. v. Life-Like Cosmetics, Inc.*, 127 F.3d 1065, 1068, 44 USPQ2d 1336, 1339 (Fed. Cir. 1997) (error to construe prior art disclosure as limited to the preferred embodiment), MPEP §2123. Also a reference is not limited to what the author describes as his invention. A reference is relevant for all that it contains. *In re Heck*, 699 F.2d 1331, 1333, 216 USPQ 1038, 1039 (Fed. Cir.1983).

Furthermore, Appellant stated that present invention achieves unexpected results by exhibiting a high pitting corrosion resistance without the need of Cu content above 0.1% as required by prior art. It is the Examiner's position, however, that Appellant's conclusive statement is not sufficient to show unexpected results. Appellant has not provided any comparative test data to show that the claimed steel with < 0.1%Cu exhibits equivalent or improve pitting corrosion resistance compared to prior art compositions containing $\geq 0.1\%$ Cu. Consequently, claims would not patentably distinguish over prior art.

Appellant argued that JP'399 and Uehara each fail to disclose a PRE value greater than 25 and also fail to recognize the advantage of a PRE value >25 and thus cannot be modified for that purposed. Example 8 in JP-399 has a PRE value > 25 but its composition contains Mo, Cu and Ti different from instant claim 17.

In response to argument, it is the Examiner's position that although prior art does not teach claimed PRE equation, it does teach a prior art alloy which possess the pitting corrosion resistant property that Appellant attributes to the equation. Also it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art, see *In re Cooper and Foley*, 1943 C.D.,357, 553 O.G.177. In the instant case, JP-399 teaches example 8 having a composition containing a specific combination of 14.9% Cr, 2.31%Mo and 0.174% N; and when calculated has PRE value $= \%Cr + 3.3 \times \%Mo + 16 \times \%N = 25.3$ and is within the claimed range of >25. Although prior art contains 2.31% Mo which is slightly lower than the claimed Mo range of 2.5 to 4%, it would be obvious to increase since a broad Mo range of 1 to 3% is taught in the general composition. Also the Cu and Ti referred to by Appellant would not affect the PRE value since they are not components in the PRE equation.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Deborah Yee/

Primary Examiner, Art Unit 1793

Conferees:

/ Roy King/

Supervisory Patent Examiner, Art Unit 1793

/Benjamin L. Utech/

Primary Examiner

A machine-English translation of Japanese patent 2001-49399 is attached.